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FOOD NEWS

FOR CONSUMERS

United States Department of Agriculture

Volume 4 Number 2

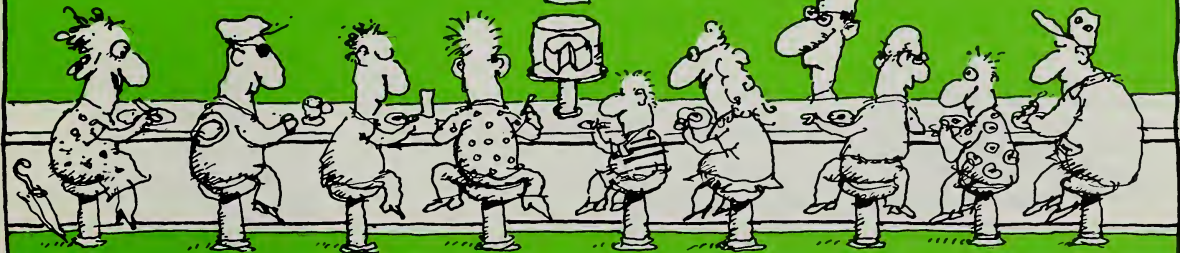
Summer 1987

MAY 17 '99

WHAT ARE AMERICANS EATING?

Story on p. 12

Cheeseburgers	Frais	Key Lime pie	Stuffed squid
Bacon & eggs	Coccol	Chickadees	orange soda
Lima beans	Oyster	Chicken toes	Ham salad
Pasta primavera	Baked	Chicken toes	Pizza
Spoon bread	last	Chicken toes	fried chicken
Baked Beans	Souvlaki	Chicken toes	mushrooms
Spaghetti	Funnel cake	Chicken toes	Pork chops
Wonton Soup	Waffles	Chicken toes	bourd almanine
Meatballs	Brook trout	Chicken toes	oatmeal
Shrimp salad	Lasagna	Chicken toes	cherry yogurt
Jelly Rolls	Sticky buns	Chicken toes	red snapper
Corn	Milk	Chicken toes	carrots



Biotech Hits
Meat and Poultry

Flies
Menace Food

Kids Learn
to Read Thermometers

FOOD NEWS

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Summer 1987
Vol. 4, No. 2

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Ask the Consumer Advisor



Dear Consumer Advisor:

I'm trying to cut down on the cholesterol in my diet. What is USDA doing to help people like me?

Dear Reader:

You're right to be concerned about cholesterol in your diet. In fact, avoiding a diet high in fat, saturated fat, and cholesterol is one of the seven major dietary guidelines recently issued by the U.S. Department of Agriculture (USDA). Lowering your blood cholesterol level is a good way to help lower your chances of having a heart attack.

We at USDA are committed to helping consumers control cholesterol intake. We're encouraging the addition of cholesterol information on labels for meat and poultry — products under our jurisdiction. We are also working with industry to develop new food items that are lower in fat and cholesterol.

The Food and Drug Administration (FDA), which oversees food items other than meat and poultry, recently proposed some rules on cholesterol labeling. We are working with them as they put these regulations into final form. As has always been our policy, we will closely follow the new FDA rules on labeling, since it's good to have consistent labeling requirements for all food.

One of our concerns about cholesterol information on labels is the health claims that may result. When is a claim accurate and fair? That's a question a group of policymakers — I'm part of this group — is looking into. Health information is useful to consumers, but only if it's not misleading.

We will continue to work to further educate consumers on the relationship between reducing cholesterol in the diet and health. Also, we will meet regularly with representatives from various public health professional and consumer groups to coordinate information efforts. It's important that the message people hear from all trusted sources is consistent.

Sincerely,

Ann Collins Chadwick

ANN COLLINS CHADWICK, Director
Office of the Consumer Advisor
Phone: (202) 382-9681

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Consumer Education

Hotline Calling— Clearing up Those Food “Myths”



Food handling practices are often ingrained in family tradition. One isn't quite sure how they got started or why—that's just the way to do it. New additives and appliances also inspire new myths. Our USDA hotline home economists know every day will bring a variety of “myth” calls. It could be that mom swears by cooling her casserole on the counter, or the neighbor is sure there are worms in hotdogs. It will help a lot, we think, to clear up some of these tales we hear on the hotline, 800-535-4555.

Q: My new oven has a time-bake feature. I can put pork chops in before work in the morning and the oven will turn on at 4 p.m. to cook the chops by the time I get home at 5 p.m. Isn't this great?

A: While in theory this may seem to be a good way to have a hot dinner waiting when you arrive home, it could be very dangerous. Why? Because bacteria in raw meat and poultry products can easily multiply to disease-causing

levels in the 8 to 10 hours the food would stand at room temperature before the oven automatically starts cooking. Since perishable products shouldn't remain at room temperature over 2 hours, use the time bake feature for these foods only when you can put them in the oven within that safe period.

Q: I read a recipe for preparing turkey that called for cooking the bird at 250° F for 12 hours. Sounds like a great way to get tender meat, but is it safe?

A: Many callers hope they can save themselves from an early awakening on a special holiday by cooking the turkey overnight at a low temperature. This method is not recommended.

Because of the low oven temperature and the large volume of a turkey—especially with stuffing, your food might take over 4 hours to reach a high enough temperature to destroy bacteria. Therefore it could be unsafe to eat.

The quality of the meat might suffer, too, since during prolonged cooking some areas would tend to become dry.

In short, we don't recommend cooking meat or poultry at oven temperatures below 325° F.

Q: Lately, every time I prepare chicken thighs or legs, the area near the bone stays dark red. I know I've cooked it long enough. Why isn't the meat done?

A: Very likely the meat is done. The color difference you're seeing may be due to the fact that chickens are now marketed at seven to nine weeks of age. In these young chickens, the bones are porous and cooking can draw out red pigment from the bone marrow. This stains the flesh. The positive side is that this probably means you have a more tender chicken.

Q: I completely thawed a beef roast in the refrigerator, then was invited out to dinner. Have I wasted my roast now that I won't have time to cook it for several days?

A: No. Your roast can be saved. As long as food is handled properly, refreezing is perfectly safe. Since your roast was thawed in the refrigerator, it's fine to pop it back in the freezer.

Be aware, though, that repeated freezing and thawing will lower the quality of the food. When faced with the choice, however, of a slight quality loss due to refreezing or losing something completely to spoilage, it's wise to opt for refreezing.

Q: Every now and then I notice that ham slices have a greenish, iridescent look. Does that mean the ham is spoiled?

A: No. As long as it's just a greenish color and not mold caused by spoilage, it is a perfectly safe and natural condition.

Like the “rainbow-effect” you see when oil spreads on a rain puddle, sometimes the natural fat and water in ham create a similar reaction. This often happens in roast beef slices too.

Q: I accidentally left my scalloped potatoes in the oven all night. The oven was turned off and the dish was covered. Won't reheating kill any bacteria that may have grown during that time?

A: Unfortunately it would not be safe to serve your casserole. While cooking

does kill most bacteria, there are food poisoners that are not destroyed by ordinary cooking. The combination of many hours and the warm atmosphere of the oven would provide an excellent growing ground for them.

Since you can't be sure of the bacterial level in the scalloped potatoes, it's best not to take a chance.

Q: Yuck! My neighbor just told me that an ingredient in hot dogs—erythorbate—is really earthworms. Is that true?

A: No. And the origin of this myth is impossible to trace! Actually, erythorbate is a safe substance used in the curing of hotdogs and bacon. Chemically, it's closely related to vitamin C.

So, it's a helpful food additive, has nothing whatever to do with worms, and is as safe as the vitamin C tablet you swallowed this morning.

Q: Please settle a family debate. I always cool my lasagna casserole completely on the counter before putting it into the refrigerator or freezer. My mother-in-law says that isn't safe. Who's right?

A: Your mother-in-law makes good food safety sense. The types of bacteria that can cause food poisoning grow best at room temperature and slightly above. The longer the casserole remains in this temperature danger zone, the more chance trouble has to "brew". Plus, you might forget about your casserole completely, as our callers often do.

Refrigerate any cooked product as quickly as possible. Where practical, divide the food into smaller, more shallow containers so it can cool quickly. The warm foods shouldn't affect the efficiency of your refrigerator.

—Susan Templin



In A Stew Over Food Safety?

Call the USDA Meat and Poultry Hotline for food safety facts.

800-535-4555 Washington, DC 447-3333

10:00 am-4:00 pm Eastern Time

Professional home economists will answer your questions about proper handling of meat and poultry, how to tell if it is safe to eat, and how to better understand meat and poultry labels.

A public service of this publication and the U.S. Department of Agriculture.



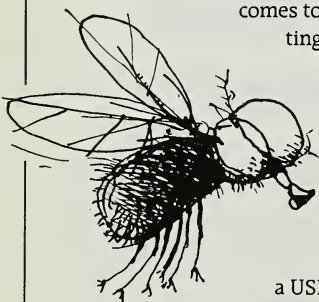
Food Safety

The Housefly— A Dirty Story But Someone Had To Tell It

by Arthur Whitmore

The housefly is such a familiar sight that you swat one away from your sandwich without a second thought. But while the fly looks innocuous, it is one of our most *dangerous* enemies.

Bacteriologists tell us the housefly's global distribution and disease-carrying capability make it a real international superpower when it comes to transmitting human illness.



From time immemorial, says

Dr. Bonnie Rose, a USDA bacteriologist in Beltsville, Md., the fly has transmitted

a wide variety of disease around the world. In the category of foodborne illness, these include dysentery, salmonellosis, typhoid fever, cholera and some parasitic diseases.

The reason is simple. "The common housefly and a number of its 'cousins' are famous for their filthy habits," says Dr. Rose.

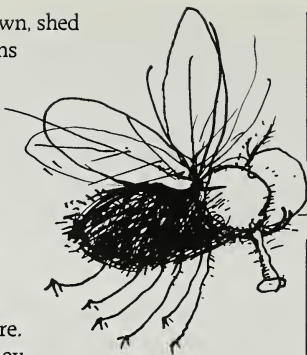
Born in Filth. A housefly begins its life in filth. An adult female seeks out fresh manure, garbage or fermenting vegetable waste in which to lay its eggs.

The female deposits a hundred or more eggs in one batch. She may lay 2 to 21 batches during her life, which could last a month or so.

Fly larvae—or maggots—hatch 1 or 2 days after the eggs are laid, and begin to feed on the material around them.

Within a week or two, the larvae

have grown, shed their skins twice and burrowed into the earth beneath the garbage or manure. There they change into pupae, from which the adult flies emerge a few days later.



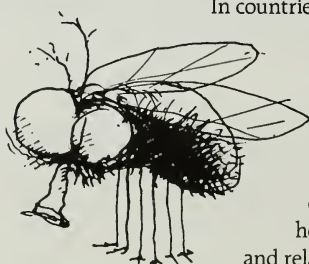
Spreading Disease. Adult houseflies begin their search for food within an hour or two after emerging from the pupal state. They are drawn by smell to human food and to garbage and feces.

A housefly eats using its proboscis—an elongated mouth organ which functions like a straw—to suck in liquified organic material. A fly can also eat solid food by regurgitating certain digestive juices—called vomitus—onto the solid food's surface, softening a portion of it, and then sucking it back through the proboscis.

As a housefly treks across waste or garbage in its search for food, it can pick up bacteria and other germs on its feet, the hairs of its legs and its proboscis. It can also ingest disease organisms and carry them in the digestive tract.

The fly can later deposit these organisms on human food, either from its feet, legs and mouth parts, or through its vomitus and feces.

Danger for Developing Nations. The housefly's disease-transmitting ability makes it an extraordinary public health hazard for many developing nations.



In countries where open sewers and privies are still common, houseflies and related flies

continually infect the human population with disease.

The flies feed or breed in human feces, pick up disease organisms that have passed into the sewage from infected individuals, and then re-transmit those disease organisms to local water and food supplies. Thus, the flies sustain an ongoing cycle of infection.

According to the U.S. Centers for Disease Control in Atlanta, much sickness in developing areas is due to fly-borne bowel disease, as are a large number of deaths in children under two years of age.

Our Domestic Fly Problem. In the United States today, disease transmission by houseflies and related flies is limited in most areas by closed sewer systems and relatively good sanitary practices. Historically, though, we had our own problems.

In the horse-and-buggy era most Americans tolerated flies as an unavoidable nuisance. Why? Well, they were virtually inescapable. Many people had privies in the backyard, relied on horses for transportation and kept livestock.

Fly breeding was so intense in manure that ordinances were finally passed in urban areas prohibiting the use of privies or the keeping of livestock inside city limits.

Conditions improved for a time when automobiles replaced horses on the street, but the migration of people from rural areas and other countries to U.S. cities in the 1920s and 30s soon created new problems.

As urban living quarters became increasingly crowded, environmental sanitation reached a low ebb. Refuse accumulated and the fly problem again became acute.

Insecticides were then introduced to control flies, and worked fairly well for some years. But, as the insects developed resistance to the chemicals, it became increasingly obvious that sanitation and refuse control would remain the primary inhibitors.

Proper Refuse Disposal = Fewer Flies. It's now an axiom with public health workers that proper refuse and waste disposal are the best way to

control flies.

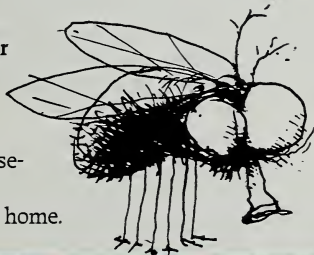
In the past, open dumps contributed significantly to fly problems in the United States. Thanks to local and federal efforts over the past few decades, however, most U.S. towns and cities now dispose of refuse in sanitary landfills.

At a properly managed sanitary landfill, refuse is compacted and then covered with 6 or more inches of earth daily. This makes it impossible for flies to feed or deposit larvae in the refuse.

Refuse should also be collected from homes and other premises at regular intervals to prevent fly larvae in garbage cans and bulk containers from migrating out to pupate in the ground nearby. In general, garbage should be collected weekly from residences and daily from commercial establishments like hotels and restaurants.

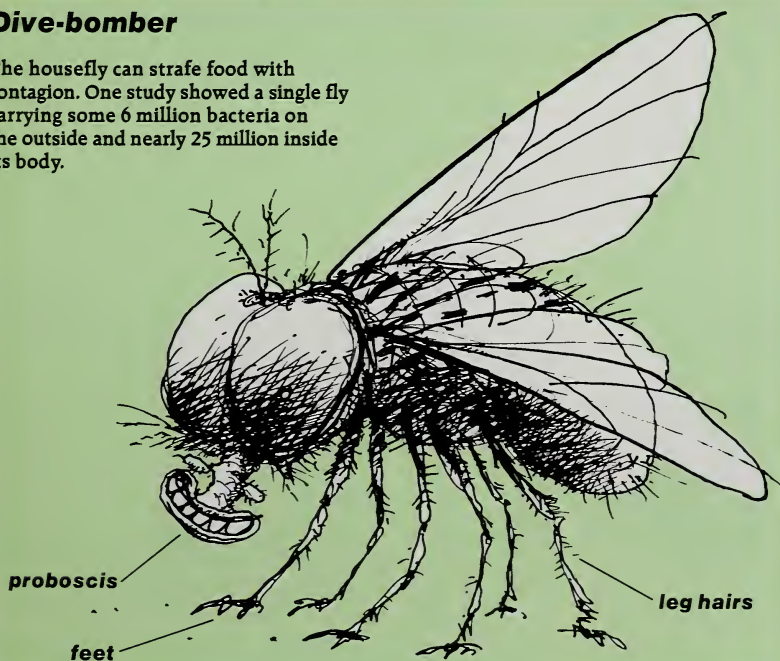
Shoo Fly, Don't Bother Me.

You can take steps to control houseflies in and around your home.



Dive-bomber

The housefly can strafe food with contagion. One study showed a single fly carrying some 6 million bacteria on the outside and nearly 25 million inside its body.

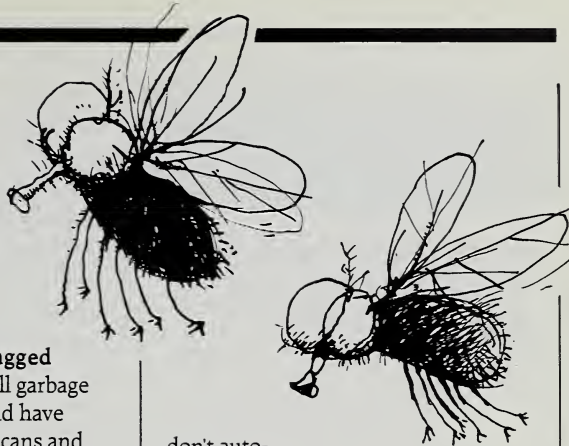


— **Use your garbage disposal for meat and vegetable waste.** A garbage compactor can help too. It packages garbage so as to reduce the fly's access to it.

— **Keep garbage and other refuse properly bagged and under cover.** Place all garbage in plastic bags. Cans should have tight-fitting lids. Keep the cans and the area where they're stored clean and tidy. And don't let garbage stand until it ferments. Ask for frequent pickups.

— **Disposal of animal excrement promptly and properly.** Bury or otherwise dispose of dog, cat and other animal feces. Don't leave pet food outside uneaten either.

— **Inspect your screens.** Both window and door screens should fit tightly. More tips: You need screens with at least 14 meshes per inch to stop houseflies, and screen doors should swing out so flies resting on the door



don't automatically come in when you open the door.

— **Spraying.** To kill flies quickly inside the home, use a household aerosol insecticide spray. Buy a reputable brand and follow the directions carefully. Avoid prolonged exposure to skin or breathing large amounts of the mist. Don't spray near an open flame, and take care not to contaminate food, dishes and food-preparation utensils and surfaces with the insecticide.

— **Preparing food.** While fixing and serving meals, keep food covered or in the refrigerator. If you're serving outdoors, plastic wrap can protect your food. A screened-in porch or patio can also protect your meal from hungry flies.

If, despite your best efforts, you see a fly land on the potato salad, scoop out that portion and toss it in the trash.

When all else fails, that's one sure way of saying "buzz-off" to what the fly can do to you or your family's health.

— *Arthur Whitmore, who holds a B.S. in science writing from the University of Maryland, has served for two years as a public affairs specialist in USDA's news division.*



Special Features

Summer Recipes "Sizzle" When You Add Food Safety Information

by Mary Ann Parmley and
Dr. Georgia Stevens Neruda

Have you ever thought how helpful it would be to put safe food handling tips right into your recipes?

It's easily one of the best ways to get the message out, and people *want* help. Over 70 percent of callers to USDA's Meat and Poultry Hotline ask for basic food handling advice.

Summer's the perfect time to start this new approach. As you know, food poisoning is a bigger problem in warm weather. And food poisoning is on the rise right now in general. Last year *listeria*, *salmonella*, even *cholera* claimed lives across the country in separate, serious outbreaks.

Sometimes these problems begin in plants and restaurants, but more often — public health research shows — dangerous food handling practices occur at home.

In an important 1985 study of Oregon home food preparers*, investigator Dr. Margy Woodburn found a high percentage of home "chefs" consistently making basic food preparation mistakes of the kind that could cause illness.

How do food preparers go wrong?

Generally speaking, people fixing food at home make mistakes of a very basic nature. Therefore, to help correct the situation, we've worked up **Six Commandments of Basic Food Safety**.

*Woodburn & VanDeRiet — Safe Food: Care Labeling for Perishable Foods, *HOME ECONOMICS RESEARCH JOURNAL*, Sept. 1985, Vol. 14, No. 1.

These rules are repeated in the recipes on the opposite page.

1. Keep it safe, refrigerate. Refrigerate foods you'll use quickly. Freeze raw meat or poultry you can't use in 1 or 2 days. Freezer should register 0° F; refrigerator, 40° F.

2. Don't thaw food on the kitchen counter. Bacteria multiply rapidly at room temperature.

3. Wash hands and utensils after contact with raw meat and poultry. Wash cutting boards or other work surfaces too. Bacteria, often present on raw foods, can spread to other foods if you don't.

4. Never leave perishable food out over 2 hours.

5. Thoroughly cook raw meat, poultry and fish. Most bacteria die at 160° F or above.

6. Freeze or refrigerate leftovers promptly. To re-use, reheat leftovers to bubbling — about 185° F. Previously cooked and stored food is highly vulnerable to spoilage and food poisoning.

How do recipe editors go wrong?

Here are a few "red flags" you can be alert for in evaluating recipes. For safety's sake, please:

1. Don't recommend that people *marinate* meat or poultry on the countertop. Since most marinating takes several hours, it should occur in a glass pan in the refrigerator.

2. Don't recommend *partial cooking*. If you bake a roast for 30

minutes, put it on the counter to steep in spices for an hour, then put it back to finish baking, bacteria can grow while it's partially heated and sitting out. Worse, some bacteria and food poisons won't be killed by the 2nd baking.

3. Don't recommend *low-temperature, long-time* cooking. Recipes that for convenience or to "tenderize" call for baking perishable foods all night or all day at low temperatures can promote bacterial growth.

Crockpot cooking also requires care. Suggest people thaw food before putting it in the pot. They mustn't overload the pot either. Food above the cooking line won't be safe. Further, because of its delay in coming to safe, high heating temperatures, the crockpot isn't suitable for reheating leftovers.

4. Please *do* recommend safe food handling for picnics and barbecues. Summer's fresh fruits and vegetables must be thoroughly washed — both to remove bacteria and pesticide residues — before use.

Raw meat, poultry and fish need careful handling at the grill. It's best to use two separate paper plates for these items. One plate for the raw product and a fresh plate to take up the cooked version. That way, bacteria don't spread from raw to cooked. People should clean utensils and hands too after working with raw meat,



poultry or fish and before working with vegetables or other foods.

Now that you have the basics, take a look at how our Meat and Poultry Hotline home economists have edited (words in green) these USDA recipes to add food safety advice.

And here's a final hint. Dr. Woodburn found that her Oregon study subjects responded to food safety advice best when it was *short* and to the point. That probably sums up the human response to instructions of any kind.

Flank Steak Oriental

4 servings, about 2½ ounces each

*Calories: 185 with sherry
175 without sherry*

- 2 tablespoons oil
- 1 tablespoon vinegar
- 1 tablespoon soy sauce
- ¼ cup sherry (if you omit sherry, increase vinegar to 2 tbs. and add 1 tbl. Worcestershire sauce and 2 tbs. water)
- 1 tablespoon honey
- 1 tablespoon finely chopped onion
- 1 clove garlic, cut in fourths
- ½ teaspoon ground ginger
- 1 pound flank steak

1. The day before serving, place steak in a shallow glass dish.
2. Mix marinade — all other ingredients — and pour over steak.
- Keep it safe, refrigerate.**
- Cover and refrigerate 18 to 24 hours, turning steak several times.
3. Next day, remove steak from marinade. Discard garlic.
4. Place steak on broiler pan and brush with marinade. **Wash hands after contact with the raw steak.**
5. Broil about 2 inches from heat, allowing 7 minutes per side. Brush with oil mixture when turning.
- Cook steak thoroughly.**
6. Serve in thin, diagonal slices. **Use a fresh plate and utensils for serving the cooked steak.**

Lobster Salad

6 servings, about ½ cup each

Calories: 320 per serving

- 1 pound cooked lobster meat fresh or frozen
- 6 hardcooked eggs
- ½ cup salad oil
- 1 tablespoon sugar
- 1 teaspoon dry mustard
- 1 teaspoon salt
- ¼ teaspoon cayenne pepper
- ½ cup vinegar
- 1½ cups chopped celery
- 1½ cups chopped green onion
- 2 tablespoons capers with liquid
- Salad greens

1. Thaw lobster meat if frozen. **Do not thaw on the kitchen counter.** Put the frozen package in a watertight plastic bag under cold water and change the water often.
2. Cut meat into ½ inch cubes.
3. Peel eggs. Separate whites and yolks. Sieve or mash the yolks and gradually blend in the salad oil.
4. For the dressing — stir sugar, mustard, salt, and pepper into vinegar. Combine with egg yolks.
5. Chop egg whites and combine with the lobster, celery, egg whites, green onion and capers.
6. Pour dressing over salad and mix lightly. Serve on salad greens.
- If the salad has sat out on a buffet or at a picnic over two hours, discard the leftovers.**

Chicken and Zucchini

4 servings, about 2½ cup each

Calories: 125 per serving

- 3 chicken breast halves, boneless without skin
- 2 teaspoons oil
- 1 garlic clove, quartered
- 1 tablespoon soy sauce
- 1½ cup thinly sliced celery
- 2 ounce can mushroom slices, drained
- 1 cup zucchini squash, cut in thin strips
- 2 teaspoons cornstarch
- 3 tablespoons water

1. **Wash chicken in cold running water to remove surface bacteria.** Drain on clean paper towel. Slice chicken in ½ inch strips. **Wash hands after contact with the raw chicken.**
2. Heat oil in a non-stick frypan. Add chicken and garlic.
3. Stir constantly until cooking chicken turns white (5 minutes). Remove garlic pieces.
4. Stir in soy sauce, celery, mushrooms, and squash.
5. Cook, covered, until vegetables are tender/crisp (4 minutes).
6. Mix cornstarch with water until smooth. Stir slowly into chicken mixture.
7. Continue cooking until ingredients are coated with a thin glaze (1 minute). **Use a fresh plate and utensils for serving. Freeze/refrigerate leftovers. Cover leftovers to reheat and heat all the way through.**

Pickled Eggs

Makes 6 eggs

Calories per egg: About 80

- juice drained from canned beets, about ¾ cup
- ¾ cup vinegar
- ¼ cup brown sugar
- ½ teaspoon salt
- 12 whole cloves
- 6 hardcooked, peeled eggs

1. Bring beet juice, vinegar, brown sugar, salt, and cloves to a boil in a saucepan. Cool.
2. Shell hardcooked eggs. Pour beet juice over eggs placed in a quart jar.
3. Weight eggs down in the pickling mixture with a small, water-filled plastic food storage bag. Tie the top of the bag.
4. **Refrigerate eggs overnight.**
5. For best quality, use eggs within two days. **If eggs are used in a buffet or picnic setting where they sit out over two hours, discard the leftovers.**

The Biotech Revolution—What's on the horizon for meat and poultry?

by Marjorie Davidson

Genetically engineered products to prevent and treat animal diseases will soon be commonplace. Cows that produce 40% more milk and hogs that need 20% less feed to reach market weight may not be far behind as the biotech revolution hits the marketplace.

Genetic Engineering—changing the DNA (hereditary material) of a cell or of an animal in order to alter its genetic code—has been called the major scientific revolution of the century and is destined to leave a lasting impact on agriculture as we know it today.

A recent survey by the Food and Drug Administration found that over 92 firms in the United States are rushing to capitalize on breakthroughs in veterinary genetic engineering—over half of them entering the field in the last 10 years.

Animal vaccines and antibodies—proteins in the blood that fight disease—have been the first genetically engineered products to become commercially marketable. Safer and more effective than more conventional medicines, these products have already proven profitable. Last year Molecular Genetics of Minnetonka, Minn., sold \$1 million worth of new genetically engineered antibodies for calf scours, a form of diarrhea that kills up to a million calves in the United States each year. The company hopes to market the first genetically engineered oral vaccines for livestock in 1988.

Biologics Corp. of Omaha, Neb., is also profiting from a recently marketed vaccine against pseudorabies, a neurological disease that affects swine. With this vaccine, made by clipping one gene from the genetic code of the pseudorabies virus, Biologics Corp. expects to profit from an estimated product market of \$5-\$6 million. Use of the vaccine will save hog producers \$60 million a year.

Other major genetically engineered products that are expected in the commercial marketplace before the end of the decade are growth hormones. Now in the testing stage, these hormones are being used to increase the production of meat and milk.

The Monsanto Company is using a bovine growth hormone at Cornell University, where daily injections are causing cows to produce 10 to 40 percent more milk. Anticipating FDA approval to market the product by 1990, Monsanto predicts the worldwide market for the growth hormone to be \$1 billion a year.

In University Park, Penn., daily growth hormone injections have produced pigs with less fat and increased growth over non-injected pigs. According to researchers at Pennsylvania State University, the hogs need 20 to 35 percent less feed to reach market weight, which could save pork producers from \$2 to \$6 billion annually.

Quotable

Says industry researcher Dr. Charles Muscoplat, Molecular Genetics Inc., Minnetonka, Minn.: "Genetic engineering technology is not a panacea, but it carries the realizable potential of solving some of the most difficult problems facing agriculture today."

Government physiologist Dr. Robert Wall at USDA's Agricultural Research Service in Beltsville, Md. comments: "We were thrilled that when seeking to increase growth in pigs, we successfully transplanted a growth hormone gene into an embryo and the animal lived. At first we were afraid to even draw blood from it for fear something might go wrong! You must remember that this technology hasn't developed overnight. It took the combined efforts of 7 scientists in 3 different cities years to produce this one special pig"

Yet with every new technology, criticism abounds. In the case of Monsanto's cows, biotechnology naysayers are concerned that the production of so much milk will cause the animals undue stress. The growth hormone testing is being protested by some farmers as well. Noting that a Cornell University study estimates that the use of bovine growth hormone will result in a need for 10 to 25 percent fewer cows, large-scale farmers fear increased competition, while some small-scale farmers are concerned that the development could put them out of the dairy business entirely.

Criticism has been aimed at the U.S. Department of Agriculture as well. Social activist Jeremy Rifkin of the Foundation on Economic Trends and the Humane Society of the U.S. challenged the Department in federal court to stop gene transfer experiments it has been undertaking at the Agricultural Research Service in Beltsville, Md. Calling it a violation of nature's boundaries by making human beings engineers of life, Rifkin objected to the experiments which have produced the successful transplant of a growth hormone gene into pigs and lambs.

While scientists and social critics debate the ethics of genetic engineering, government administrators are tackling the Herculean task of how to regulate the new technology.

Although not yet marketed, the eventual commercialization of genetically engineered animals as human food may pose a number of legal and regulatory questions that have not been encountered before.

Daniel D. Jones, of USDA's Office of Agricultural Biotechnology, points out a prior experience the federal meat inspection program had with two hybrid crosses of cattle and buffalo. One hybrid, called "cattalo," resulted from the direct cross-breeding of buffalo and cattle.

USDA determined that since cattalo have the physical appearance of buffalo and since buffalo need not be federally inspected, there was no requirement that the "cattalo" be inspected. Yet a second hybrid, "beefalo," said to

have resulted from a cross of 3/8ths buffalo and 5/8ths cattle, had the general physical appearance of domestic cattle and thus fell under USDA's mandatory inspection requirement.

Provisions will also need to be made about labeling of food products prepared from bioengineered animals. Laboratories in the

United Kingdom and West Germany have produced what geneticists call a chimera (ki-me-ra), an organism containing tissues of different genetic origin—in this case, a sheep and goat. If this chimera were presented for slaughter, regulators are asking themselves, would the meat be labeled goat meat, sheep meat or just plain animal meat?



Recognizing that the answers to these and many other questions may not be immediately forthcoming, USDA has published a policy paper dealing with the specific concerns of veterinary biotechnology, and has established an Office of Agriculture Biotechnology to oversee USDA's role in the evolution of this new technology.

Will the capability now available to manipulate genes bring a future of four-legged chickens and giant cattle? Not likely, says George E. Seidel, Jr., of the Animal Reproduction Laboratory at Colorado State University at Ft. Collins. "It's a common misconception that a major objective in animal engineering is to increase the size of animals," Seidel says. "In most instances the opposite is true, simply because smaller animals cost less to maintain."

So although the technology may eventually exist to produce sheep with feathers and hogs with horns, in the near future at least cows will probably still look like cows, and chickens like chickens. It will be the animals' metabolic patterns that will be changed to make them produce more efficiently.

After all, as Seidel notes, in designing animals for the future, the most common objective will be the same as it is now—to provide more and inexpensive food.

—Marjorie Davidson, a public affairs specialist for USDA's Food Safety and Inspection Service, has written about public policy matters for 15 years.

Further Reading

BIOTECHNOLOGY, An Industry Comes of Age, a book by Steve Olson, published in 1986 by the National Academy of Sciences, National Academy Press, Washington, D.C.

EMERGING DEVELOPMENTS IN VETERINARY BIOTECHNOLOGY, a study published in 1986 by the Food and Drug Administration, Washington, D.C.

"*Genetic Resistance of Disease*", a magazine article by Thomas Quaife in the November issue of PORK '86.

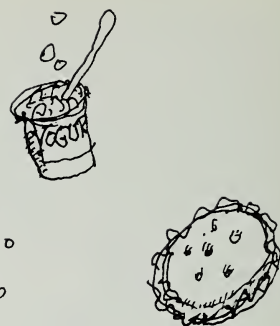
Health and Nutrition

FOOD NEWS Quiz

What Are Americans Eating?

Rate Yourself as a
Trend Spotter

1. Because over 50 percent of American households now have one, the market for quick-fix _____ products is booming.
2. First considered "health food," then a "diet" lunch, Americans last year spooned up 3 pounds apiece because they really *like* _____
3. Chicken consumption is estimated to have risen (3, 7, 12) percent in 1986.
4. Soft drink consumption has increased (100, 300, 500) percent since 1950.
5. What standard meat case item now bills itself "the other white meat?"
6. Wanting it sweet but low-cal, Americans consumed (16, 25, 40) pounds of artificial sweetener last year.
7. The average American ate (42, 78, 91) pounds of beef last year.
8. Guess: Americans will eat (more, less) ice cream in 1987.



And the answers are . . .

1. Microwave products. Source: American Institute of Food Distribution, Fairlawn, N.J.
2. Did you guess yogurt? Consumption has been rising since 1965 when we were lapping up $\frac{1}{3}$ pound apiece. FDA statistics.
3. 7 percent. Commerce Department estimates show an increase in average chicken consumption from 75 pounds per person in 1986 to 79 pounds in 1987.
4. 300 percent. That's a lot of fizz. FDA statistics.
5. Pork. That's their new health-conscious slogan.
6. 16 pounds of artificial sweetener each, mostly saccharin. FDA statistics.
7. 78 pounds of beef, says the Commerce Department.
8. More ice cream, maybe 3.2 percent more in 1987. Commerce Department statistics.

If you scored . . . 6-8, Declare yourself an expert; 3-5, You make econometrist class; 2 or less, Better luck on our next quiz.

—Richard Bryant

News Wires

Starting July, Meat And Poultry Products will be Sulfite-Labeled

For many years, sulfites have been widely used by the food industry because of their usefulness in preventing browning and spoilage in fruits and vegetables. Sulfites are also used in seafood, baked goods and other items.

However, as there were more and more recorded cases of serious reactions—typically in asthmatics who unknowingly ingested sulfite at salad bars, government has moved to restrict its use.

In 1986, FDA banned the use of sulfites in raw fruits and vegetables, and set up a requirement that these substances be listed on the label when present at 10 parts-per-million or more in other products. FDA will require sulfite labeling on prescription drugs starting this June 3, 1987.

The Bureau of Alcohol, Tobacco and Firearms has ordered that alcoholic beverages be sulfite-labeled by January 1988.

And USDA's Food Safety and Inspection Service has told meat and poultry processors that by July 9, 1987, their products must be labeled if they contain confirmable sulfite levels. Following FDA's lead, USDA also defines "confirmable" as 10 parts-per-million or higher.

"Sulfites are prohibited in fresh meat and poultry because they mask spoilage," said Margaret O.K. Glavin, director of FSIS' Standards and Labeling Division. "However, sulfites may be present in stews and other processed meat or poultry products that contain potatoes or other ingredients treated with the substances."

Under the new requirements, USDA inspectors will check processors' calculations of sulfite levels in stews and other

finished products to ensure accurate labeling, Glavin said.

How would you know if a product contains sulfites? Sulfites can be listed on the label by name, for example—sulfur dioxide, sodium sulfite, sodium bisulfite, sodium metabisulfite and potassium metabisulfite, or in a group as "sulfiting agents," or "sulfites."

—Irene Goins

Listeria Found in Raw Vegetables

Recently, there have been several outbreaks of listeriosis associated with dairy products. It was big news in 1985 when over 40 listeria-associated deaths were reported in the California Jalisco Cheese incident.

What was less publicized was a 1985 listeriosis outbreak in eight Massachusetts hospitals. The probable cause there was raw vegetables.

And it's been documented that in 1981, a number of people in Nova Scotia contracted listeriosis from delicatessen coleslaw. The coleslaw was made from

cabbage contaminated with the bacteria *Listeria monocytogenes*. The infection probably originated in soil fertilized with listeria-infected sheep manure. Fortunately, sheep manure is rarely used for this purpose.

What does this lead us to believe? That we may need to keep a weather eye on raw vegetables as a possible source of listeriosis.

Listeriosis is a relatively new food-borne bacterial disease. For some, it can be life threatening. In pregnant women it can cause loss of the fetus. Newborns, the elderly and those with weakened immune systems, such as AIDS and cancer patients, are especially susceptible.

Listeria is a consumer headache since it grows very well at refrigerator temperatures—40° F or thereabouts. And, like most food poisoners, you can't see it since it's microscopic. Nor does it change the appearance, flavor or odor of the food.

To further complicate matters, says Dr. Robert Brackett, a listeria researcher at the University of Georgia, the listeria bacteria is rather widespread. It can be found in soil, air and water.

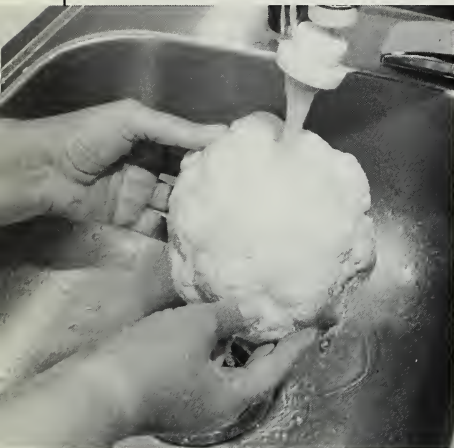


Scrub-a-dub. Use a vegetable brush on hardy items like carrots.

So perhaps the best protection for the future is to be vigilant about some basic food safety practices we already know.

Take time to carefully wash all raw vegetables before using them. This helps remove any pesticide residues as well as listeria and other bacteria.

—Joanne Hough



Run other items under the tap. Drain water off before refrigerating.



True Grit. After removing stems, plunge spinach leaves in cold water. Change water and plunge a second time.

Orange Juice— The Chemistry of Fresh-Squeezed

Fresh-squeezed orange juice has long been the boast of fine food service establishments—the best hotels and restaurants.

It's not a claim they can make idly either since you can *tell* the difference between fresh and frozen or concentrated juice.

But now, with a boost from USDA chemist Manuel Moshonas in Winter Haven, Fla., commercial orange juice processors may soon be able to make their product taste more like fresh-squeezed.

In addition to giving consumers something to look forward to, this is big financial news. Some 90 percent of the 20 million boxes of oranges produced in the U.S. each year become processed orange products. Total value? Over \$3 billion.

What is Moshonas's breakthrough? Using gas chromatography, he has isolated what he calls the fresh orange's "flavor code." This is a unique blend of some 21 major chemicals that give fresh orange juice its special *tang*.

Traditional processes of freezing and concentrating the juice have inadvertently upset this delicate balance, causing the noticeable changes we all know so well.

But it may now be possible, says Moshonas, for citrus processors to modify their production methods to produce processed orange juice with a nearly-fresh taste.

"We're closing in on nature's way of making orange juice," says Moshonas.

His future plans include trying to break the flavor barrier on fresh apple, pineapple and grape juice.

For further information, call Manuel Moshonas at USDA's Citrus and Subtropical Products Lab, Winter Haven, Fla., (813) 293-4133.

—Mary Ann Parmley

the

Read Any Good Thermometers Lately?

At the end of the 1500s, the scientist Galileo invented the first thermometer just for the fun of it. It was a great invention but it was not accurate.

Since then thermometers have improved. They are accurate and there are many different kinds.

One type can be hung outside the house. You can watch the red line climb up when the sun hits it on a hot summer afternoon. You can also watch the red line drop when clouds hide the sun or a rainstorm cools things off.

The red line rises when the hot sun heats the red alcohol in the thermometer. Heat makes the alcohol expand, so it rises up the tube. Cold shrinks things. The liquid drops down the tube when it gets cold.

A fever thermometer works the same way. When you have fever, the heat from your body makes the silver liquid climb. The liquid is mercury.

To read a fever thermometer, look at the top of the thin silver line. Which notch is it closest to? What number is closest to that notch? That's your temperature.

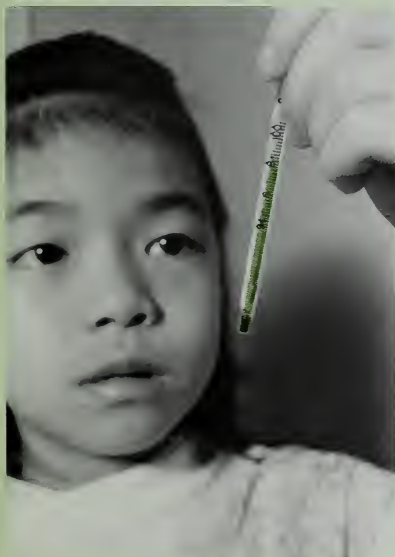
We need thermometers in the kitchen too. Why? Because many foods taste better cooked. And cooking to the right temperatures keeps food safe from food poisoning germs. Food poisoning can make you very sick like a bad case of flu.

Children's Page



Learn to Read a Meat Thermometer.

The thermometer reads _____. Is this roast done?



Take Your Own Temperature.

The thermometer reads _____. Does Huyen have a fever? Clue: 98.6° F is a normal, healthy reading.



Check to See if You have a Safe, Cold Refrigerator.

The thermometer reads _____. Is this refrigerator safe for food?

The next time you have a roast at home, use a meat thermometer to make sure it's done and safe from germs.

Before the roast goes into the oven, push the tip of the thermometer deep into the center. Don't let it touch bone.

Check the thermometer when it's time to take the roast out. It should read 160° F for a beef roast.

Just as food poisoning germs are killed when food is cooked hot enough, they don't cause trouble on refrigerated food either. What germs like are outside temperatures or the temperature of a warm room.

You can use an appliance thermometer to make sure your refrigerator is working right. Put the thermometer on the top refrigerator shelf before you go to bed. Read it the next morning. A safe refrigerator should run at about 40° F.

Do you think Galileo guessed his thermometer would be so important?

—Hedy Ohringer

Temperature Checks. Body—Huyen won't miss school today. 98.6° F is normal. Roast—130° F is not safe from germs. Cook it to 160° F. Refrigerator—40° F is safe.

PARENTS, TEACHERS: for details on thermometers, see the WORLD BOOK encyclopedia. For more on safe cooking temperatures, order the SAFE FOOD BOOK, 534P, from the Consumer Information Center, Pueblo, Col. 81009.



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